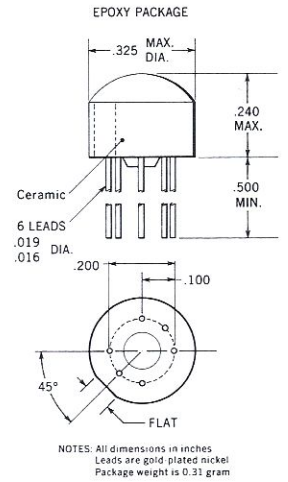
μA703E
RF-IF AMPLIFIER
FAIRCHILD LINEAR INTEGRATED CIRCUITS

GENERAL DESCRIPTION - The μA703E is a linear integrated circuit with useful unneutralized power gain to frequencies in excess of 100 MHz. It features the capability of nonsaturating limiter operation with a suitable output load, making it ideally suited for FM-IF limiter applications.

Applications include FM-IF limiter-amplifier, TV sound IF amplifier, chroma reference oscillator for color TV, and fixed-gain amplifiers to 100 MHz.

PHYSICAL DIMENSIONS



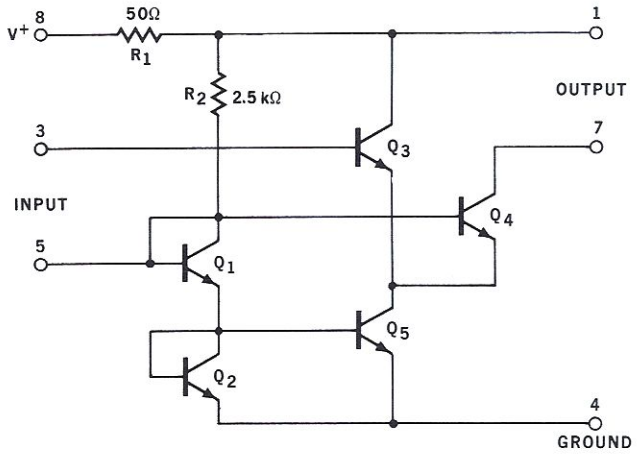
NOTES: All dimensions in inches
Leads are gold plated nickel
Package weight is 0.31 gram

ORDER PART NO. U8B7703394

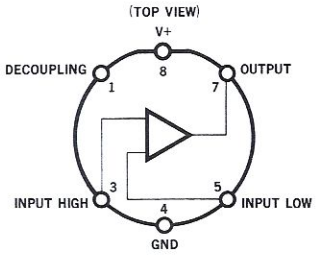
ABSOLUTE MAXIMUM RATINGS

Supply Voltage		20 V
Output Collector Voltage		24 V
Voltage Between Input Terminals		±5.0 V
Internal Power Dissipation	(Note 1)	200 mW
Operating Temperature Range		0°C to +70°C
Storage Temperature Range		-65°C to +150°C
Lead Temperature (Soldering - 60 seconds)		300°C

SCHEMATIC DIAGRAM



CONNECTION DIAGRAM



NOTE 1: Rating applies for ambient temperatures to +70°C.

313 FAIRCHILD DRIVE, MOUNTAIN VIEW, CALIFORNIA, (415) 962-5011, TWX: 910-379-6435

FAIRCHILD SEMICONDUCTOR
A DIVISION OF FAIRCHILD CAMERA AND INSTRUMENT CORPORATION

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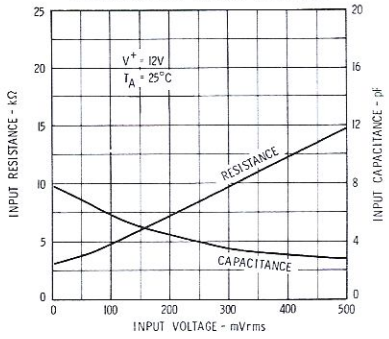
ELECTRICAL CHARACTERISTICS (T_A = 25°C, V^+ = 12 V, f = 10.7 MHz unless otherwise specified)

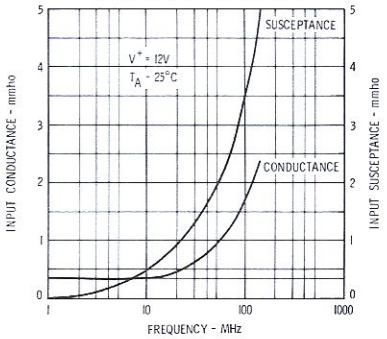
Parameter	Conditions	Min.	Typ.	Max.	Units
Power Consumption	e_{in} = 0		110	170	mW
Quiescent Output Current			2.5	3.3	mA
Peak-to-Peak Output Current	e_{in} = 400 mV rms	3.0	5.0		mA
Output Saturation Voltage			1.4	1.7	Volts
Forward Transadmittance	e_{in} = 10 mV rms	24	35		mmhos
Reverse Transadmittance			0.002		mmho
Input Conductance	e_{in} < 10 mV rms		.33	1.0	mmho
Input Capacitance	e_{in} < 10 mV rms		9.0	12.5	pF
Output Conductance			0.03	0.05	mmho
Output Capacitance			2.6	4.0	pF
Noise Figure	R_S = 500 Ω		6.0		dB
	R_S = 500 Ω, f = 100 MHz		8.0		dB
Maximum Stable Gain			40		dB

TYPICAL PERFORMANCE CURVES

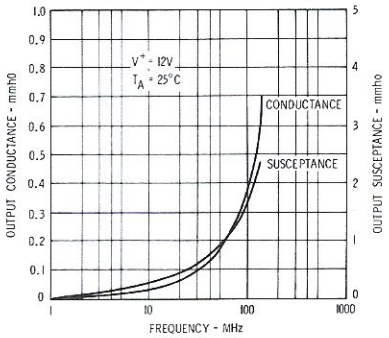
INPUT RESISTANCE AND CAPACITANCE AS A FUNCTION OF INPUT VOLTAGE



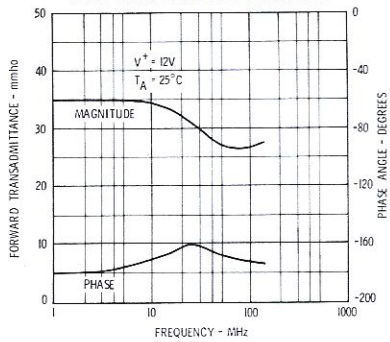
INPUT ADMITTANCE AS A FUNCTION OF FREQUENCY



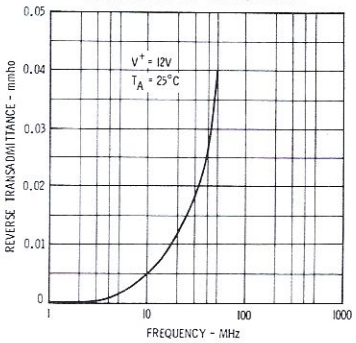
OUTPUT ADMITTANCE AS A FUNCTION OF FREQUENCY



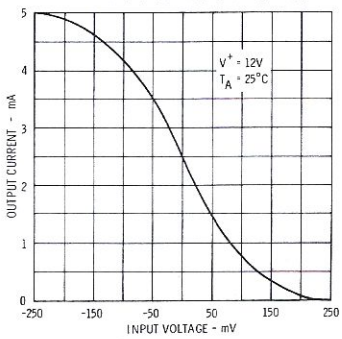
FORWARD TRANSADMITTANCE AS A FUNCTION OF FREQUENCY



MAXIMUM REVERSE TRANSADMITTANCE AS A FUNCTION OF FREQUENCY

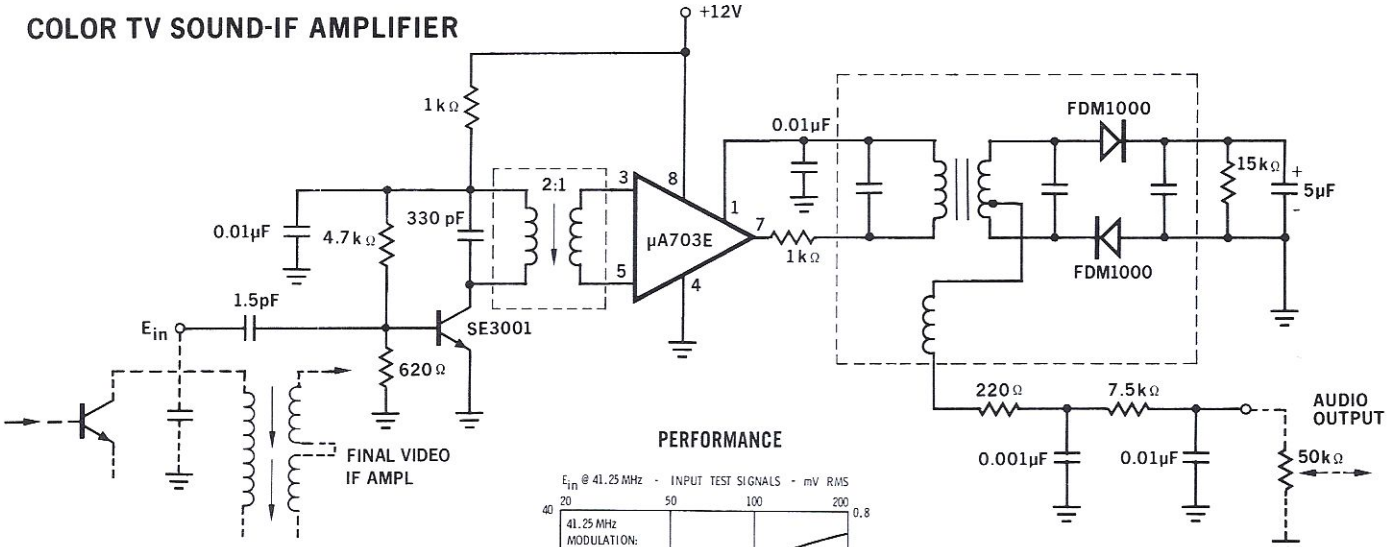


OUTPUT CURRENT AS A FUNCTION OF INPUT VOLTAGE

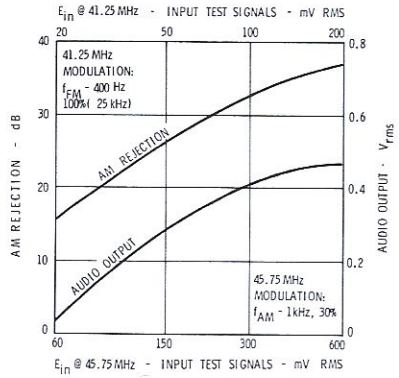


TYPICAL CIRCUIT APPLICATIONS

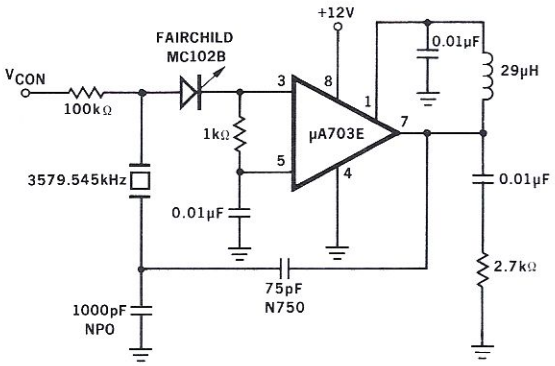
COLOR TV SOUND-IF AMPLIFIER



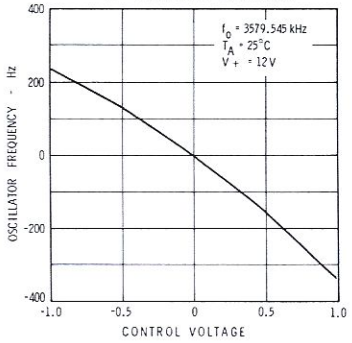
PERFORMANCE



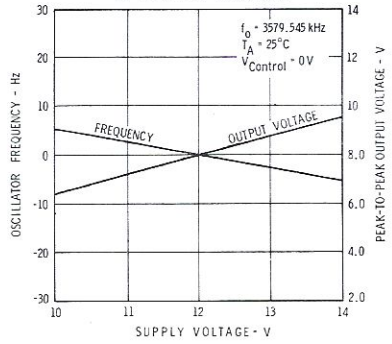
3.58-MHz VOLTAGE-CONTROLLED OSCILLATOR



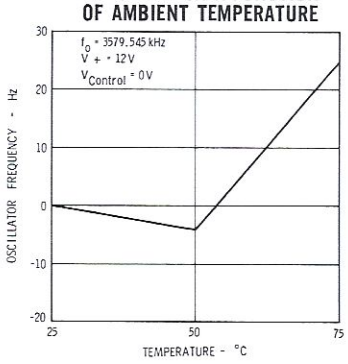
NORMALIZED OSCILLATOR FREQUENCY AS A FUNCTION OF CONTROL VOLTAGE



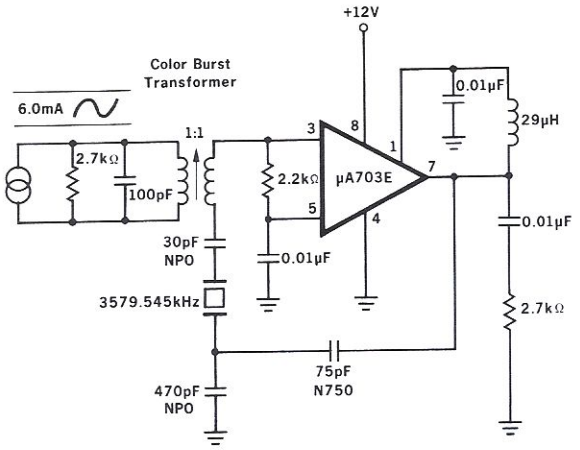
NORMALIZED OSCILLATOR FREQUENCY AND OUTPUT VOLTAGE AS A FUNCTION OF SUPPLY VOLTAGE

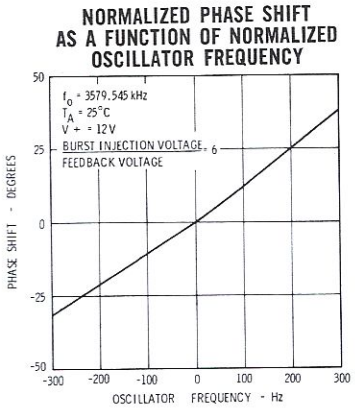


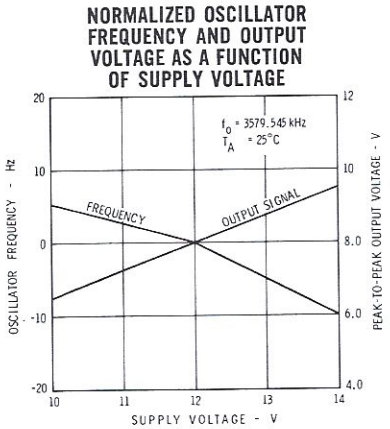
NORMALIZED OSCILLATOR FREQUENCY AS A FUNCTION OF AMBIENT TEMPERATURE

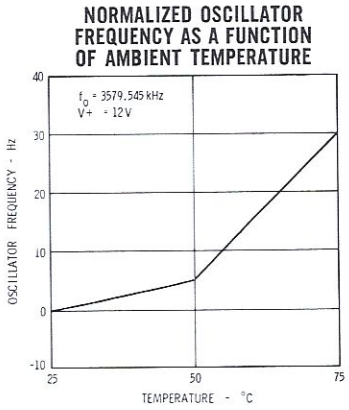


3.58-MHz INJECTION-LOCKED OSCILLATOR

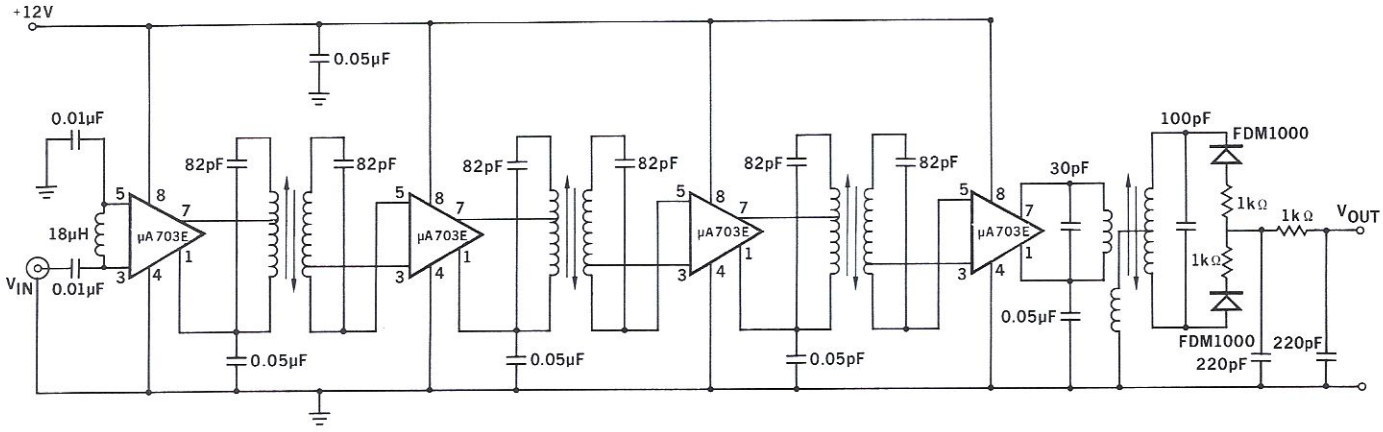



NORMALIZED PHASE SHIFT AS A FUNCTION OF NORMALIZED OSCILLATOR FREQUENCY
f_o = 3579.545 kHz
T_A = 25°C
V+ = 12V
BURST INJECTION VOLTAGE / FEEDBACK VOLTAGE
PHASE SHIFT - DEGREES
OSCILLATOR FREQUENCY - Hz


NORMALIZED OSCILLATOR FREQUENCY AND OUTPUT VOLTAGE AS A FUNCTION OF SUPPLY VOLTAGE
f_o = 3579.545 kHz
T_A = 25°C
FREQUENCY
OUTPUT SIGNAL
OSCILLATOR FREQUENCY - Hz
PEAK-TO-PEAK OUTPUT VOLTAGE - V
SUPPLY VOLTAGE - V


NORMALIZED OSCILLATOR FREQUENCY AS A FUNCTION OF AMBIENT TEMPERATURE
f_o = 3579.545 kHz
V+ = 12V
OSCILLATOR FREQUENCY - Hz
TEMPERATURE - °C

FOUR-STAGE FM-IF AMPLIFIER



Full limiting with $V_{in} < 50\mu V$.

Current consumption 27 mA.

Power gain / stage 26.5 dB.

Peak-to-Peak separation of detector 800 kHz.

THD < 0.8% with ±75 kHz deviation @ 400 Hz.

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